Amendments to the Claims

The listing of claims will replace all prior versions, and listings of claims in the application.

1-13 (cancelled)

14. (currently amended) A position determining system in an exposure portion of a lithography tool that measures a position of a pattern on a substrate before a subsequent pattern is exposed, the system comprising:

a superluminescent device (SLD) that transmits a light beam;

a lens system that directs the light beam onto a target alignment area;

a sensor that receives combined coherent beams of light diffracted by the target alignment area via the lens system, the sensor configured to use the combined coherent beams of diffracted light to determine a position of the target alignment area before the subsequent pattern is exposed and to produce a control signal related to the determined position, wherein the control signal is used to substantially reduce unwanted reflections due to optics within the exposure portion; and

a positioning system configured to align the substrate to receive the subsequent pattern based on the control signal,

wherein the SLD is configured to produce a coherence length of the light beam that is less than a thickness of a lens in the lens system or less than a distance between lenses within the lens system.

15. (previously presented) The system of claim 14, wherein the SLD is configured to produce the coherence length of the light beam that substantially eliminates interference between at least one of ghost or spurious reflections caused by the lens system and the diffracted light beam.

16. (previously presented) The system of claim 14, wherein the SLD is configured to produce the coherence length of the light beam that is less than a smallest distance between first and second ones of the lenses in the lens system.

17. (previously presented) The system of claim 14, wherein the SLD comprises a laser diode having an anti-reflection coating on at least one surface.

18. (previously presented) The system of claim 14, wherein the sensor is configured to determine the position of the target alignment area using interferometry.

19. (previously presented) The system of claim 14, wherein the SLD is configured to produce the coherence length of the light beam that is about 0.5 mm or less.

20. (currently amended) A position measuring method that measures a position of a current pattern on a substrate before a subsequent pattern is exposed, comprising:

generating superluminescent light having a coherence length;

directing the superluminescent light onto a target alignment area using a lens system;

diffracting superluminescent light from the target alignment area to produce +/- first order diffracted beams resulting from the lens system and the substrate alone;

directing the +/- first order diffracted beams onto a combining element using the lens system;

combining the +/- first order diffracted beams using the combining element; ~~and~~

determining a position of the target alignment area based on an interference pattern generated from the combining step;

generating a control signal based on the determined position; and

positioning the substrate to properly align the substrate to receive the subsequent pattern based on the control signal,

wherein the coherence length of the superluminescent light is less than a thickness of a lens in the lens system or less than a distance between lenses within the lens system.

21. (previously presented) The method of claim 20, wherein the generating step comprises using a superluminescent device (SLD) to generate the superluminescent light.

22. (previously presented) The method of claim 20, wherein the generating step comprises using a laser diode having at least one anti-reflective surface to generate the superluminescent light.

23. (previously presented) The method of claim 20, wherein the coherence length of the superluminescent light is about 0.5 mm or less.

24. (previously presented) The method of claim 20, wherein the coherence length of the light beam is less than a smallest distance between first and second ones of the lenses in the lens system.

25. (currently amended) The method of claim 20, wherein the coherence length of the light beam is less than a smallest thickness of one of the lenses in the lens system.